



Lincoln University Digital Dissertation

Copyright Statement

The digital copy of this dissertation is protected by the Copyright Act 1994 (New Zealand).

This dissertation may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- you will use the copy only for the purposes of research or private study
- you will recognise the author's right to be identified as the author of the dissertation and due acknowledgement will be made to the author where appropriate
- you will obtain the author's permission before publishing any material from the dissertation.

Māori and Freshwater: A comparative study of freshwater co-management agreements in New Zealand

A dissertation
submitted in partial fulfilment
of the requirements for the Degree of
Master of Applied Science (Environmental Management)
at
Lincoln University
by
Annalise Rose Davies

Lincoln University

2015

Abstract of a dissertation submitted in partial fulfilment of the
requirements for the Degree of M.Appl.Sc

**Māori and Freshwater: A comparative study of freshwater co-management
agreements in New Zealand**

By

A. R. Davies

Water governance is a significant local, regional, and national challenge that echoes parallel concerns held around the world. New Zealand has a unique approach to reconciliation between colonised Indigenous Peoples and state control, which is often cited by other Indigenous societies as a model worth investigating. Over the past 20 years, Treaty settlements have been established that have seen the ownership of the beds of lakes and rivers returned to their rightful iwi. This has created the need for co-management agreements in order to meet the needs and challenges facing effective management between Indigenous people and local government. Representative, adaptive, exercising rangatiratanga and the inclusion of Indigenous knowledge are all elements essential to co-management regimes in New Zealand. This research aims to identify how local authorities are responding to and providing co-management avenues for Māori involvement in freshwater governance and establish how effective the various co-management regimes studied are at incorporating Māori involvement. A comparative analysis of three co-management regimes in New Zealand, Te Waihora, Te Arawa Lakes and the Waikato River expose the effectiveness of co-management agreements as well as providing measures that the agreements could implement in order to have more effective co-management.

Keywords: Māori. Co-Management, New Zealand, Te Waihora, Te Arawa Lakes, The Waikato River, Indigenous Knowledge, Freshwater, Freshwater Management

Acknowledgements

Firstly, I would like to give sincere appreciation to my supervisor Dr Simon Lambert, I am truly appreciative of the time and knowledge you have dedicated to helping me with this research, your enthusiasm for Māori affairs truly inspired me.

I would also like to thank my parents, Debbie and Alan. Without their continuous support and encouragement I would never have been able to finish.

Finally I give a sincere thank you to the girls who completed their Master of Applied Science (Environmental Management) at the same time. They were a constant source of support, and were always there when I needed someone to bounce an idea off, cry, celebrate, and always willing to have a drink and debrief.

Table of Contents

Abstract	iii
Acknowledgements	iv
Table of Contents	v
List of Figures	vii
List of Māori Terms	viii
1. Introduction	1
1.1. Research Aims and Objectives	2
1.2. Outline of Dissertation	3
1.3. Methodology.....	4
2. Background	6
2.1. Freshwater in New Zealand	6
2.2. Indigenous values and Knowledge.....	7
2.3. Government Engagement with Indigenous people.....	8
2.4. Legislative Requirements for Māori Participation in Freshwater Management	10
2.4.1.Resource Management Act.....	10
2.4.2.National Policy for Freshwater Management.....	11
2.4.3.Local Government Act.....	12
2.4.4.Regional Policy Statement and Regional Plans	13
2.4.5.Iwi Management Plans.....	13
3. Co-Management	15
4. Introduction to Case Studies	20
4.1. Te Waihora/Lake Ellesmere	20
4.2. Te Arawa Lakes	21
4.3. The Waikato River.....	22
5. Local Government Arrangements	24
5.1. Te Waihora/Lake Ellesmere	24
5.2. Te Arawa Lakes	26
5.3. The Waikato River.....	29
6. Conceptual Framework	32
6.1. Representative (Power-sharing)	32
6.2. Adaptive	32
6.3. Exercising Rangatiratanga (Cultural Redress)	33
6.4. Inclusion of Indigenous Knowledge	34

7. Analysis.....	35
7.1. Representative (Power-sharing)	35
7.2. Adaptive	36
7.3. Exercising Rangatiratanga (Cultural Redress)	38
7.4. Inclusion of Indigenous Knowledge	39
7.5. Summary of Analysis.....	41
8. Discussion.....	42
8.1. Representative (Power-sharing)	42
8.2. Adaptive	43
8.3. Exercising Rangatiratanga (Cultural Redress)	45
8.4. Inclusion of Indigenous Knowledge	46
9. Conclusion	47
10. References.....	49

List of figures

Figure 1	Te Waihora Catchment (Waihora Ellesmere Trust, 2014)	21
Figure 2	Te Arawa Lakes (Rotorua Lakes Council, 2015)	22
Figure 3	Waikato River Authority Areas (<i>Waikato River Authority., 2008</i>)	23
Figure 4	Te Waihora Environment (Department of Conservation. & Te Rūnanga o Ngāi Tahu., 2005)	25
Figure 5	Cultural Values Framework for Te Arawa Trust Board (Ngati Whakaue, 2015)	28
Figure 6	Summary of Analysis.....	41

List of Māori Terms

Manawhenua:	Territorial Rights, authority over land or territory
Iwi:	Large group of people descended from common ancestor and associated with a distinct territory
Hapū:	Section of large kingship group and primary political unit in traditional Māori society
Taonga:	Treasure
Rāhui:	Reserved, restricted access
Tapu:	Sacred, prohibited, forbidden
Wai ora:	Sacred water, highest quality or has meaning
Wai Māori:	Freshwater
Kaitiakitanga:	Guardianship, stewardship, trusteeship
Tangata Whenua:	Local people, hosts, Indigenous people
Rangatiratanga:	Chieftainship, ownership, right to exercise authority
Kaitaki:	Leader
Mahinga kai:	Food-gathering place
Tikanga:	Custom, method, correct procedure
Kawa:	Etiquette
Mātauranga Māori:	Māori Knowledge, world view and perspectives

1. Introduction

Water governance is a significant local, regional, and national challenge that echoes parallel concerns held around the world. Freshwater is essential to New Zealand's economic, environmental, cultural and social wellbeing (National Policy Statement for Freshwater Management, 2014). Traditionally freshwater was managed using traditional Māori management systems, however the management of water resources changed post colonisation with resources being 'sold' and managed by the Crown. This has provided challenges in managing water resources in order to provide for the values that are important to all New Zealanders (National Policy Statement for Freshwater Management, 2014). Globally, government engagement with Indigenous people remains a contentious issue. New Zealand has a unique approach to reconciliation between colonised Indigenous Peoples and state control which is often cited by other Indigenous societies as a model worth investigating (Allen, Ataria, Apgar, Harmsworth & Tremblay, 2009; Stephenson & Moller, 2009). One method that New Zealand utilises is the development of co-management agreements, designed to increase Māori involvement and participation. Co-Management provides Indigenous people and local authorities with the ability to develop agreements about management of a resource based on shared knowledge and decision-making structures (Berkes, 2009). Te Waihora, Te Arawa Lakes and the Waikato River all utilise co-management regimes in various ways. This research presents the different regimes operating in these areas and assesses them against a conceptual framework. This framework states that for effective co-management regimes must be representative, adaptive, exercise rangatiratanga and include Indigenous knowledge. All three regimes analysed apply the conceptual framework, however the

various methods utilised to develop the co-management regimes provide different results, with varying degrees of success. The analysis enables an understanding of the avenues that local authorities are providing for Māori involvement in freshwater governance. The research examines how effective the co-management regimes are and provides recommendations for more effective co-management.

1.1. Research Aims and Objectives

The aim of this research is to compare different management regimes to identify and analyse the various avenues that local governments have undertaken to increase Māori involvement in freshwater governance. Through a comparison of various methods, local governments will be able to establish what approach is more effective and adjust their approach accordingly.

The objective is to conduct a comparative study of three different management regimes operating throughout New Zealand, designed to increase Māori involvement and participation. The three different regimes cover Te Waihora, Te Arawa Lakes and the Waikato River.

The research questions that have guided this research are:

- How are local authorities responding to and providing co-management avenues for Māori involvement in freshwater governance

- How effective are the various co-management regimes studied at incorporating Māori involvement, including the use of Indigenous knowledge.

1.2. Outline of Dissertation

This dissertation is presented in nine chapters. Chapter one introduces the issues surrounding freshwater management in New Zealand, particularly highlighting the issue of Indigenous involvement. This chapter also introduces the purpose of this dissertation and specifies the research aims, objectives and questions that have guided this research. This chapter also describes the methodology for this research, which has adopted a case study analysis approach. The second chapter provides a background on freshwater in New Zealand, Indigenous Knowledge, Government engagement as well as legislative requirements for Māori participation in freshwater management. This is followed up in chapter three with a review of co-management identifying what co-management is, the origins of co-management, why it is important and reasons for the rise in the prevalence and use of co-management as a form of participation and governance. Chapter four introduces the case studies of Te Waihora, Te Arawa Lakes and the Waikato River, with chapter five detailing the local government arrangements operating in each of the case studies. Chapter six establishes the conceptual framework that is needed to guide the analysis. This conceptual framework depicts the theory behind the need for co-management arrangements to be representative, adaptive, exercise rangatiratanga and include indigenous knowledge. Chapter seven, a cross-case analysis, presents the findings of this research, with each case study being analysed against the conceptual framework. The discussion in chapter eight then completes this analysis with the cases being evaluated to determine the most effective method for co-management, and providing

recommendations for the improvement of the existing co-management regimes. The final chapter, chapter nine provides conclusions to be taken from the research and suggests area for further research.

1.3. Methodology

This research compares three different management regimes operating throughout New Zealand, designed to increase Māori involvement and participation: Te Waihora, Te Arawa Lakes and the Waikato River. A case study method has been adopted due to the need to understand and represent a number of different perspectives. Case study analysis is undertaken from multiple perspectives. This means that the researcher considers not only the voice and perspectives of the relevant actors but also of the various groups of actors and the interactions between them (Baxter & Jax, 2008; Feagin, Orum, & Sjoberg, 1991). Further, case study analyses allow the researcher to gain an in-depth examination of a case within its real-world context (Yin, 2014). This means that case study evaluations can “(1) capture the complexity of a case, including relevant changes over time, and (2) attend fully to contextual conditions, including those that potentially interact with the case” (Yin, 2014, pg 220). For the purpose of this research the ability to identify changes over time and recognise interactions is of the upmost importance. Examining the three case studies of Te Waihora, Te Arawa Lakes and the Waikato River allows a comparative analysis to be undertaken to examine the differences both within and between the cases (Baxter & Jax, 2008). A case study analysis also allows the findings to be consolidated in to a cross-case synthesis in order to identify trends as well as discrepancies (Yin, 2014).

In order to guide the research a conceptual framework had to be developed. The conceptual framework serves several purposes including identification of the cases that were included in the study, describing what relationships may be present based on logic, theory and/or experience, as well as serving as an anchor to the research (Baxter & Jax, 2008). The development of the conceptual framework involved drawing upon academic research to establish the theory that was required for a multiple case analysis. The three case studies were then evaluated individually against the conceptual framework, with a report being developed assessing the three cases (Chapter 7). An examination was then conducted on the reports to evaluate the differences and similarities present in the three cases, as well as assessing the cases against the conceptual framework to determine the strengths and weaknesses among the cases (Chapter 8). This enabled conclusions on a way to determine which avenue provides the most effective avenue for Māori involvement in freshwater governance.

2. Background

2.1. Freshwater in New Zealand

New Zealand has traditionally had an abundant supply of freshwater (Sax, 2009).

However New Zealanders are becoming deeply concerned as that once abundant supply is diminishing, both in quality and quantity (Hughey, Kerr, & Cullen, 2013; Hughey & Taylor, 2008; New Zealand Business Council for Sustainable Development, 2008). Water is one of New Zealand's major national advantages (Land and Water Forum, 2010) as it is a part of our bi-cultural identity, heritage and culture; water supports the natural environment as well as the recreational culture that is highly valued. It is also essential to key industries, namely agriculture, power generation and manufacturing as well as maintaining the "100% pure NZ" tourism brand which is essential to New Zealand's success as an international destination (Land and Water Forum, 2010).

The value that water holds for Māori is different to the value that Western/Pākehā place on water. In the pre-colonial Māori society, freshwater was regarded as a valuable resource, as an extension of the land, part of an undivided entity where all water connects (Te Wai Māori, 2008). Perception of water was bound in cultural and spiritual beliefs with the physical and cultural values being interlinked with this intricate, holistic and interconnected relationship with the natural world having been developed over thousands of years (Harmsworth & Awatere, 2013a; Memon & Kirk, 2011).

Traditionally water was regulated through Māori, collectively owned and allocated by communities (Memon & Kirk, 2011; Ruru, 2010) through complex management systems.

Ownership and control of a waterway was traditionally the property of the tribe that held the mana whenua rights over them. These rights were established by whakapapa, conquest and usage and were highly contested among tribes as the rights were extremely valuable (Marsden, 1988). Water was considered a taonga (treasure), due to its life-giving properties and importance in sustaining aquatic environments, which were essential to Māori as a food source. Due to this there were often restrictions placed on the use of water including the use of rāhui or temporary restriction and tapu for more permanent bans (Te Wai Māori, 2008). Māori also ranked water, from the tapu (sacred) wai ora, to water for everyday use, wai Māori (Harmsworth & Awatere, 2013b). This signifies the importance that Māori placed on freshwater and the significance of the resource to the pre-colonial Māori society.

2.2. Indigenous values and knowledge

Until recently New Zealand society has been dominated by Western values and perspectives, with Māori values being disregarded (Memon & Perkins, 2000; Smith, 1999). Indigenous knowledge (IK) is “knowledge that clearly derives from, or is rooted in the traditional way of life of Indigenous peoples” (Williams, 1997, p30). This ‘mātauranga Māori’ represents the knowledge and understandings which are reflected in the language, social organisation, values, and institutions of that particular culture (Berkes, 1999; Waitangi Tribunal, 2011), and like other IK systems is intricately bound to communities and places as well as to whole ways of life (Ross, Pickering Sherman, Snodgrass, Delcore, & Sherman, 2011). Indigenous cultures in today’s society face a challenge in ensuring that their rights, traditional knowledge systems and values are

reflected in statutory and non-statutory arrangements for freshwater management (Coombes, 2007). From a resource management perspective it is often the Indigenous peoples that are most affected through environmental regulation as their Indigenous knowledge forms and traditional management methods are essentially disregarded (Jentoft, Minde, & Nilsen, 2003). Traditional concepts and knowledge still shape the philosophy of Māori development today and traditional values form the predominant basis of the Māori approaches to resource management perspective.

2.3. Government engagement with Indigenous people (local and international)

As stated the pre-colonial Māori freshwater management system was vastly different to the riparian management systems implemented by the colonists. The Treaty of Waitangi was signed in 1840 and promised to be a collaborative partnership between Māori and the Crown (Matunga, 2000). The first few years following the signing of the Treaty Māori still controlled much of the land ‘sold’ to the colonists (Te Whiti Love, 2003) and as a result remained the primary resource managers, with traditional management still in place. The influx of European immigrants however signified a change, and from the 1860s onward Māori control of land and resources diminished as land was ‘purchased’ and then confiscated if tribes refused to sell (Te Whiti Love, 2003). The Māori concept of water as an undivided entity became systematically fragmented (Te Wai Māori, 2008) with the traditional knowledge methods almost completely disappearing from resource management.

Early statutes such as the Water Power Act (1903) and the Water and Soil Conservation Act (1967) affirmed the Crown's position as having the sole right to use, dam, divert and

discharge water (Te Wai Māori, 2008). The Town and Country Planning Acts of 1926 and 1953 both concluded that Māori planning was outside the realm of mainstream planning and did not have to specially provide for Māori participation in statutory planning (Matunga, 2000). The Town and Country Planning Act (1977) was the first statute since 1840 that acknowledged the relationship of Māori and the environment.

The Waitangi Tribunal was established under the Treaty of Waitangi Act (1975). The purpose of the Act was to establish a tribunal to make recommendations on claims relating to the practical application of the principles of the Treaty and to determine its meaning and effect and whether certain matters are inconsistent with those principles. A number of Treaty settlements claims have been reported via the Tribunal (Ruru, 2009). These settlements offered a formal apology as well as economic redress, and cultural redress. In certain cases the Crown has accepted tribal ownership of lakebeds in both the north and south islands as a form of cultural redress. There are now provisions in every statutory document that require consultation and participation with Māori; this will be discussed in more depth below.

Globally, government engagement with Indigenous people remains a contentious issue. The United Nations adopted the United Nations Declaration on the Rights of Indigenous Peoples in 2007 (Charters & Stavenhagen, 2009). This declaration sets out the full range of civil, political, economic, social, cultural and environmental rights of Indigenous people. It also imposes obligations on states as well as international organisations and inter-governmental organisations as well (Charters & Stavenhagen, 2009). The adoption of the Declaration marked a significant turning point in Indigenous rights around the globe (Dorough, 2009).

Indigenous participation in freshwater governance is an issue prevalent in many Indigenous societies, not just Māori in New Zealand. In Australia Aboriginal communities face similar issues in finding ways to articulate their knowledge, aspirations and interests in water management in to freshwater plans (Hoverman & Ayre, 2012). Both the United States and Australia are confronting the challenge of Indigenous claims to water through the adaptation of various adaptive governance regimes, with these regimes attempting to adapt to the Indigenous values that underlie water rights settlements (Bark, Garrick, Robinson, & Jackson, 2012).

2.4. Legislative requirements for Māori participation in freshwater management

2.4.1. Resource Management Act (1991)

The Resource Management Act (1991) is regarded as one of the key pieces of legislation governing the use, development and protection of natural and physical resources in New Zealand (Resource Management Act, 1991). The overriding direction of the Resource Management Act is found in Part 2 of the Act which establishes the key principles and concepts, which guide the exercise of powers and functions, provided under the Act.

Section 14 of the Resource Management Act gives regional and local councils the power to make rules and guidelines for the take, use, damming and diversion of freshwater. In the formulation of any rules and guidelines, councils must take in to account and recognise the Māori relationship with water (Resource Management Act, 1991).

Section 6(e) requires that anyone exercising functions and powers under the Act must recognise and provide for matters of national importance including “the relationship of

Māori and their cultures and traditions with their ancestral lands, water, sites, wai tapu and other taonga” (Resource Management Act, 1991). Section 7(a) requires councils to have particular regard to kaitiakitanga and section 8 requires that anyone exercising powers and functions under the Resource Management Act (1991) must take in to account the principles of the Treaty of Waitangi (Resource Management Act, 1991). The term ‘taking in to account’ has been interpreted to mean that decision makers are required to consider the principles of the Treaty, weigh them against other factors and balance them before reaching a decision (Ministry for the Environment, 1997).

2.4.2. National Policy Statement for Freshwater Management (2014)

The National Policy Statement for Freshwater Management (2014) sets out objectives and policies that direct local authorities to manage freshwater in an integrated and sustainable way (National Policy Statement for Freshwater Management, 2014). The National Policy Statement identifies that tangata whenua values and interests across all wellbeings is essential. It also recognises that involvement of iwi and hapū in the overall management of freshwater is essential to meeting obligations under the Treaty of Waitangi.

Policy D1 provides for the involvement of iwi and hapū, and ensures that Māori values and interests are identified and reflected in the management of freshwater.

Local authorities shall take reasonable steps to:

- a) involve iwi and hapū in the management of fresh water and freshwater ecosystems in the region;*

- b) work with iwi and hapū to identify tāngata whenua values and interests in fresh water and freshwater ecosystems in the region; and*
- c) reflect tāngata whenua values and interests in the management of, and decision making regarding, fresh water and freshwater ecosystems in the region.*

2.4.3. Local Government Act (2002)

The purpose of the Local Government Act (2002) is to provide for democratic and effective local government. Parts 2 and 6 provide principle and requirements for local authorities which are intended to facilitate Māori participation in local government processes (Local Government Act, 2002). Section 14(d) states that a local authority should provide opportunities for Māori to contribute to its decision-making processes.

Section 40(1)(i) establishes that a local authorities governance statement must include policies for liaising with, and memoranda or agreements with Māori.

Part 6 (s75(b)) states the obligations of local authorities in relation to the involvement of Māori in decision making process, including the obligations of local authorities for consultation. This includes the taking in to account the Māori relationship with their ancestral lands, water, sites, wai tapu and other taonga in the course of any significant decisions relating to land and water (s77(c)). Section 81 establishes the contributions to decision making process by Māori, including considering ways in which it may foster the development of Māori capacity to contribute to the decision making process.

2.4.4. Regional Policy Statements and Regional Plans

The sections in Part 2 of the Resource Management Act (1991) provide a strong base for Māori to voice their concerns regarding freshwater (Ruru, 2009). In addition there are several other sections, which create mandatory requirements for local authorities in relation to Māori participation. For example, section 61(2A)(a) directs that a regional council, when preparing or changing a regional policy statement must take in to account any relevant planning documents recognised by an iwi authority and lodged with the council. The same regional policy statements must also state any resource management issues of significance to iwi authorities in the region (s62(1)(b)). A territorial authority, when preparing or changing a district plan must also take in to account any relevant planning document recognised by an iwi authority (s74(2A)).

A report commissioned by the Ministry for the Environment reviewed regional policy statements as well as regional plans and found that all statements and plans (affecting freshwater) identified and described the relationships between Māori and freshwater as well as issues of concern to Māori (Coffin & Allott, 2009).

2.4.5. Iwi Management Plans

As stated the Resource Management Act requires regional councils and local authorities to take in to account any relevant planning document recognised by an iwi authority (Resource Management Act, 1991). Such documents are commonly referred to as Iwi Management Plans and are resource management plans prepared by an iwi, iwi authority, Rūnanga or hapū. They are prepared as an expression of rangatiratanga to help

iwi and hapū exercise their kaitaki roles and responsibilities as well as identify important issues in the area (KCSM Consultancy Solutions., 2004). They are holistic documents that cover more than just matters established in part 2 of the Resource Management Act (1991).

In order for an Iwi Management Plan to be formally recognised the document must be recognised by an iwi authority, relevant to the resource management issues of the region/district and lodged with the relevant council(s).

3. Co-Management

There are a number of methods that local authorities can use to provide avenues for Māori involvement in freshwater governance. This can include increased consultation, formal recognition of Iwi Management Plans, increasing the legislative requirement for Māori participation as well as the introduction of co-management regimes. This report focuses on three co-management regimes for freshwater prepared by different local authorities, designed to meet the needs of the local iwi, with the inclusion of Indigenous knowledge as well as identifying and providing solutions for the challenges facing effective freshwater management. The development of partnership-based co-management and co-governance frameworks are essential areas of postcolonial political development particularly in New Zealand (Dodson, 2014). However in order to compare the various co-management regimes, we must first understand what co-management is, the origins behind it, as well as identifying reasons for the rise in the prevalence and use of co-management as a form of participation and governance.

There have been a number of studies looking at what co-management is, the origins of co-management, why it is important and reasons for the rise in the prevalence and use of co-management as a form of participation and governance. a number of different terms used to convey the idea of co-management (Bown, Gray, & Stead, 2013). This includes collaborative partnerships, joint management, participatory management, community-based management, delegated co-management and more recently adaptive co-management (Castro & Nielsen, 2001; Nursey-Bray & Rist, 2009).

The term co-management was developed in the late 1970's (Jentoft et al., 2003), which was around the time that the concept of sustainable development began to gain momentum. The aim of co-management is to allow Indigenous peoples and governmental authorities to develop agreements about management of a resource based on shared knowledge and shared decision-making structures (Berkes, 2009; Natcher, Davis, & Hickey, 2005; Nursey-Bray & Rist, 2009; Zurba et al., 2012). This view is also shared by Ross et al. (2011), however they go on to state that often there is an imbalance between Indigenous and Western knowledge, with Western knowledge and decision-making processes outweighing the traditional management forms. Head (2005) follows on this thought and states that collaborative partnerships are most likely to succeed when certain conditions are met. Those conditions include stakeholder inclusion, mutual dependence, clear objectives and empowering effects of collaboration. Co-management often has more to do with managing relationships than resources, and therefore understanding the cultural conditions in which the regimes operate is crucial to forecasting their success or failure (Natcher et al., 2005). As Nursey-Bray and Rist (2009) note co-management must be seen as a sharing of power and responsibility between resource users. Meadowcroft (1998) goes on to further this idea by stating that co-management goes much further than just co-operation and requires collaboration across all stakeholders involved. This can be achieved through building vertical as well as horizontal linkages and decision-making structures within the management regime (Nursey-Bray & Rist, 2009). Adaptive co-management builds on this theory by incorporating flexibility and the ability to evolve over time as the needs of the resource and stakeholders change (Buck, Geisler, Schelhas, & Wollenberg, 2001; Zurba et al., 2012).

Bown et al. (2013) state that the concept of co-management developed to provide a theoretical alternative to the traditional management model, which was failing to meet the needs of the community, as well as the ecological demands of the resource.

Matunga (2000) notes that the framework for dual planning has existed in New Zealand since the 1840's with the signing of the Treaty of Waitangi. Māori planning has existed outside the realm of the traditional legislative framework, through colonial exclusion. It is only in recent times that the dual planning frameworks have begun to combine through the use of co-management agreements.

Ross et al. (2011) agree that co-management occurs where formal but not legally binding arrangements regarding resource management are negotiated between Indigenous owners and the managers of the area. The managers in the case of New Zealand are the local authorities that have the power to make rules and guidelines for the use of the resource. However Natcher et al. (2005) describe co-management regimes as having evolved from informal agreements to complex decision and policy-making bureaucracies responsible for resource management around the world. The co-management regimes operating in Te Waihora, The Waikato River and Te Arawa Lakes are representative of this evolution. The rise in co-management regimes can also be due to the shift from government to governance, with a move away from the traditional command-and-control approaches (Armitage, Berkes, & Doubleday, 2007; Bown et al., 2013). This is shown in New Zealand with the development of statutes such as the Local Government Act (2002) that devolves power from central to local government, and requires consultation and participation at a legislative level.

The benefits of co-management include more efficient and equitable governance, fostering of conflict resolution and encouragement of stakeholder participation (Armitage et al., 2007). Armitage et al. (2007) go on to state that co-management can improve a number of functions including data gathering, allocation decision, protection of resources, enforcement of regulations, enhancement of long term planning and more inclusive decision making. Hoverman and Ayre (2012) agree with these benefits and further identified that acknowledgement of traditional management systems improved community engagement and specifically builds confidence in the water management process.

It is important to recognise that like any form of governmental regime, co-management has its limits. Often Indigenous people express disappointment in co-management regimes due to the dominance of western paradigms over Indigenous knowledge (Watson, 2013). In order for a co-management regime to be effective, all stakeholders must be content with the position that they are holding and the power-sharing roles effective within the agreement.

There have been many studies conducted in to the effectiveness of co-management in New Zealand as well as various governance structures utilised for Māori participation in freshwater (Local Government New Zealand., 2011; Ruru, 2009; Tipa, 2002) . However there have been no studies that identify and compare the various avenues that local authorities are providing for Māori in freshwater. This study aims to fill this gap and provide a comprehensive analysis of three different co-management regimes, then compare them utilising a conceptual framework to establish which regimes are the most effective for each criteria. It is hoped that this will enable local authorities to identify the

most effective way of achieving Māori participation in order to manipulate the existing regimes and create new ones that are stronger and more effective at recognising the needs of Māori.

4. Introduction to Case Studies

4.1. Te Waihora

Te Waihora/Lake Ellesmere is a large, shallow coastal lake, located southeast of Christchurch on the way to Banks Peninsula. It is the largest lake in Canterbury and the 5th largest lake in New Zealand, approximately 20,000 ha with 75km of shoreline including the ecologically important Kaitorete Spit, which separates the lake from the Pacific Ocean (Hughey & Taylor, 2008). Figure 1 shows the catchment and location of Te Waihora. Te Waihora is of significant importance for wildlife, with 166 species of birds being reported at the lake. It also supports a range of introduced and native fish including whitebait and eel. Te Waihora is an important area recreationally, commercially, historically and culturally (Department of Conservation., n.d). The lake holds strong cultural significance to Ngai Tahu, traditionally being a major gathering place for food and is considered an important source of mahinga kai. Overtime the surrounding land use of the lake has changed, with intensive agricultural practices such as dairy farming becoming the primary use (Hughey & Taylor, 2008). These intensive land use practices have seen the health of the lake steadily deteriorate over the years. To help mitigate this deterioration a number of management strategies and plans have been implemented over the last 20 years. These plans aim at regenerating the health of the lake to support the many wildlife that rely on Te Waihora/Lake Ellesmere and to protect the cultural significance of the area for Māori (Hughey & Taylor, 2008).

Material removed due to copyright compliance

Figure 1: Te Waihora Catchment (Waihora Ellesmere Trust, 2014)

4.2. Te Arawa Lakes

The Te Arawa lakes are a collection of 13 lakes in the Rotorua region in the Central North Island. There has traditionally been a very strong relationship between Te Arawa and their ancestral lakes (Rotorua Lakes Protection and Restoration Action Programme., 2006). Historically the lakes were a main source of mahinga kai in the region as well as a means of transport. To Te Arawa, the lakes were taonga, and the lakes were and continue to be the foundation of their identity, cultural integrity, tikanga and kawa ("Te Arawa Lakes Settlement Act," 2006). However over the last few decades' nutrient loads to the lake have increased dramatically due to land use changes, sewage inflow and groundwater discharge. These nutrient levels have caused algal concentrations and blooms triggering the quality of the lakes to come in to question (The Rotorua Lakes

Strategy Co-Management Project Team., 2001). This decrease in quality as well as the strong Māori ties has meant that the ownership and management of the lakes has been strongly contested. This has resulted in a number of agreements and partnerships to enable the most effective and equitable management of the lakes.

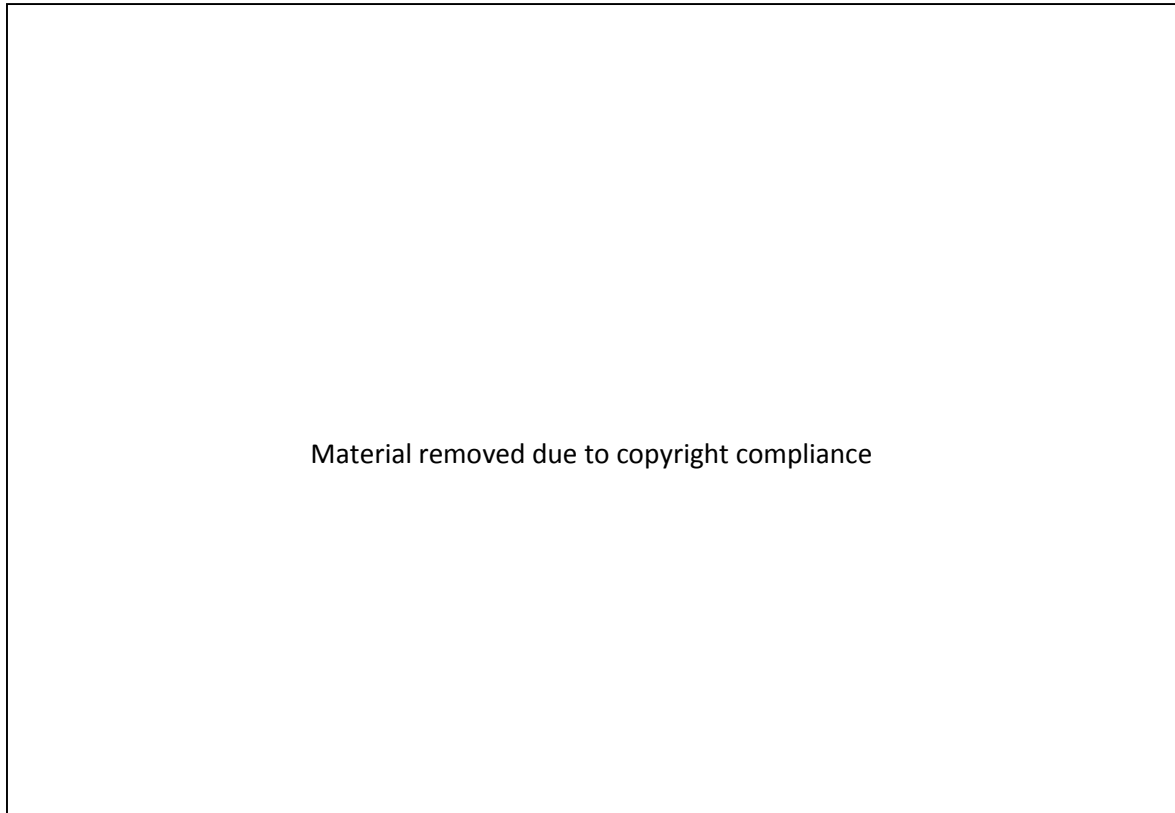


Figure 2: Te Arawa Lakes (Rotorua Lakes Council, 2015)

4.3. The Waikato River

The Waikato River is the longest river in New Zealand, having its roots at Mt Ruapehu in the central North Island and then flowing from Lake Taupo to the Tasman sea at Port Waikato after travelling over 425km with it's catchment covering 14, 260km² (see figure 1) (Waikato River Authority, 2008). The Waikato River is the most intensively used river in the country, with eight hydroelectric dams as well as having a high percentage of

intensive agriculture on the land surrounding the River. To Māori along its banks the river is of cultural and historical significance. The Waikato River provided for spiritual and material needs including food, trade and travel as well as being a source for cleansing and healing (Watene-Rawiri & Flavell, 2010). Traditionally the River was considered to have healing properties and was renowned for the ability to supply a variety of kai. However this has changed and tribes of the Waikato River believe the river to be ill, with a reduction in water quality, fish stocks and illnesses among the people (Watene-Rawiri & Flavell, 2010). It is for these reasons that the tribes of the Waikato River seek the restoration, management and protection of the Waikato through a number of legislative changes and agreements.

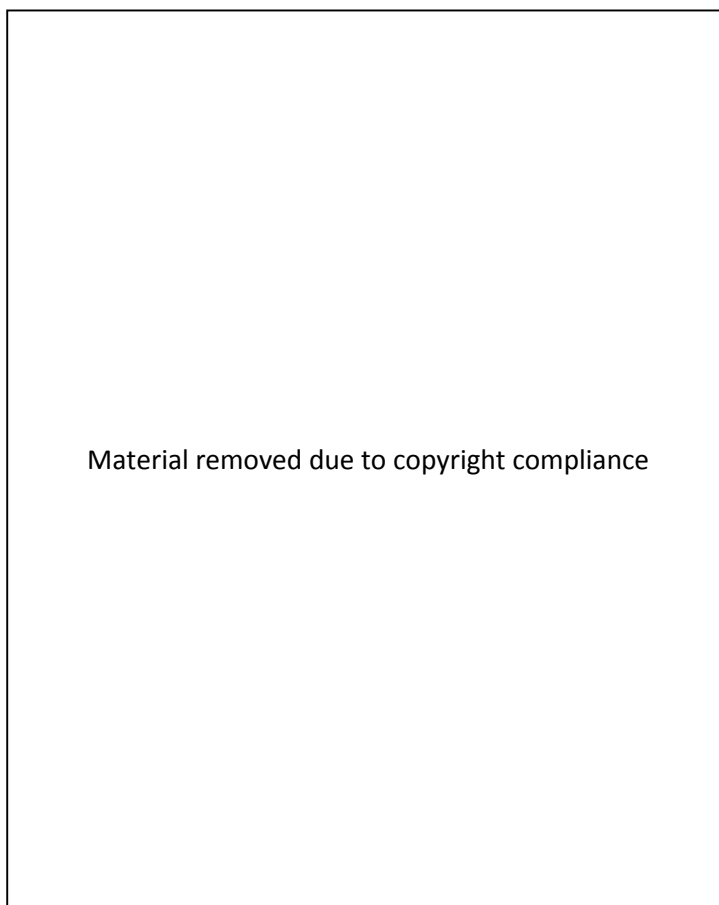


Figure 3: Waikato River Authority Area (Waikato River Authority, 2008, pg 10)

5. Local Government Arrangements

This chapter aims to discuss the local government arrangements in place at each of the case studies. This includes an overview of the relevant acts made at central government level that were necessary for the implementation of the plans. This will then be followed by a background, description and overview for each co-governance agreement, co-management plan and joint management plans operative within the case study area.

This section will provide a brief overview of the local arrangements including:

- Background
- Establishment
- Their purpose
- Key facts
- How local authorities and Māori are involved

There are multiple co-management agreements operational in each of the case study areas. However in order to compare the various avenues that local government are providing for Māori this report focuses on the primary agreements, with background provided as to the other co-management agreements operating.

5.1. Te Waihora/Lake Ellesmere

Since the colonisation of New Zealand, Ngāi Tahu has been protesting the land purchases and forced sale of their lands in the 1840's. After nearly 150 years, Ngai Tahu succeeded in their efforts to have the Crown address their grievances through a Waitangi Tribunal

report. This report formed the basis of the Ngāi Tahu Claims Settlement Act (1998) where the Crown acknowledged the injustice that occurred against Ngāi Tahu and to provide economic redress. As a part of the Ngāi Tahu Claims Settlement Act (1998) the bed of Te Waihora was returned to Ngāi Tahu. However the area of the lakebed returned was not the entire lakebed, with the Crown retaining a portion of the lakebed ownership (Figure 1). This resulted in a number of management issues including the need to consolidate the needs of the local governments, the Department of Conservation and Ngāi Tahu. (Ngāi Tahu Claims Settlement Act, 1998) also enabled the establishment of the Te Waihora Management Board. This is a committee established by Te Rūnanga o Ngāi Tahu to represent the Papatipu Rūnanga holding mana whenua within the Te Waihora Catchment with delegated responsibilities to exercise Ngāi Tahu's statutory and non-statutory responsibilities pertaining to the lakebed of Te Waihora (Te Waihora Management Board., Te Rūnanga o Ngāi Tahu., & Canterbury Regional Council., 2012).

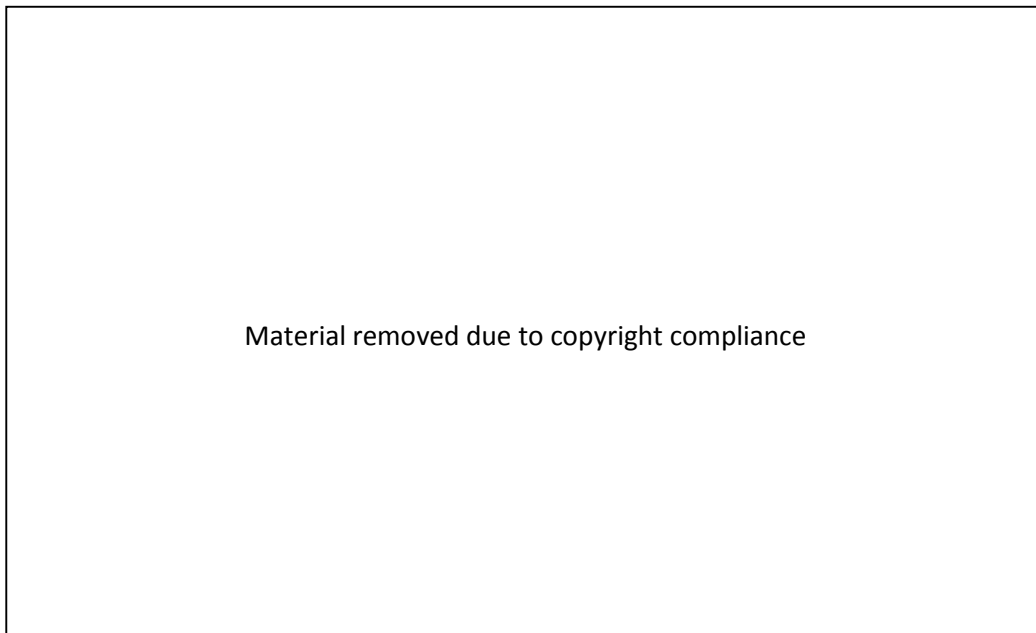


Figure 4: Te Waihora Environment (Department of Conservation. & Te Rūnanga o Ngāi Tahu., 2005, pg 9)

In order to address these management issues a joint management plan was established (Department of Conservation. & Te Rūnanga o Ngāi Tahu., 2005). This plan only covers the area owned by Ngāi Tahu, and the Department of Conservation. This includes structures and plants that touch the bed, public conservation lands around and near the lake; it does not include the waters of the lake, nor the fisheries within those waters.

The Te Waihora Co-Governance Agreement was established in 2012 and records the commitments of the Canterbury Regional Council, Ngāi Tahu, and the Te Waihora Management Board ('the parties') to share responsibility for the Te Waihora catchment (Te Waihora Management Board. et al., 2012). The purpose of the co-governance agreement is to provide for an enduring, collaborative relationship between the parties that includes the sharing of functions, duties and powers under the Resource Management Act (1991) and Local Government Act (2002). The parties agreed to a number of responsibilities in the co-governance agreement in order to more effectively manage the lake and surrounding land, guided by a jointly prepared vision for the Te Waihora catchment.

5.2. Te Arawa Lakes

The management of the Rotorua lakes is undertaken through a different regime to the co-management agreements operating in Te Waihora. In order to promote the sustainable management of the Rotorua Lakes and their catchments a governance body was formed called the Rotorua Te Arawa Lakes Strategy Group. The Bay of Plenty

Regional Council, Rotorua District Council and Te Arawa Lakes Trust form the Strategy Group and are termed the partner organisations. The Te Arawa Lakes Trust represents the various hapū of the area, and is responsible for receiving and managing the redress on behalf of Te Arawa in which the benefits of the settlement are available to all members of Te Arawa.

In order for the Rotorua Te Arawa Lakes Strategy Group to be established a joint management committee had to be founded under the Local Government Act (2002) in anticipation of the groups formal establishment under the Te Arawa Lakes Settlement Act (2006).

The purpose of the Strategy Group is to ensure that the lakes of the Rotorua district and their catchments are preserved and protected for the use and enjoyment of present and future generations, while recognising and providing for the traditional relationship of Te Arawa with their ancestral lakes. In 2007 a formal Memorandum of Understanding between the Crown and the Rotorua Lakes Strategy Group was signed to formally establish a working relationship for the purpose of maintaining and improving water quality of the lakes. The aim of the Strategy Group is to develop a programme to protect the water quality of the lakes including sewage reticulation, nutrient levels and land use changes. The programme is worth over \$200 million and is set to continue over a 20-year period. The partner organisations meet regularly to discuss issues, facilitate consultation and negotiate funding.

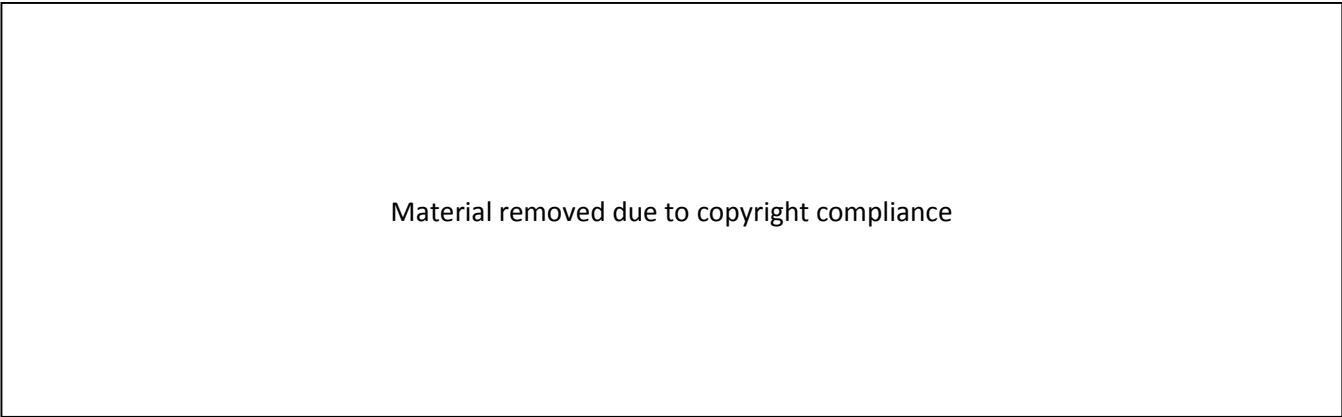
The different partner organisations each play a vital and different role in order to achieve the vision of the strategy group. Unlike other joint committees the Te Arawa Lakes Trust has an equal membership as directed by the Te Arawa Lakes Settlement Act (2006).

The Crown

The Crown provides a national perspective on lake management as well as owning the water and air above the lakebeds. The Crown also funds 50% of the project and a representative of the Ministry for the Environment attends meetings as an observer.

Māori (Te Arawa Lakes Trust)

The role of the Te Arawa Lakes Trust is to represent the iwi and hapū of the area. Te Arawa is the owner of the lake beds and subsequently provides advice on all cultural aspects associated with the lakes. A cultural values framework is being developed in order to fulfil the vision and Te Arawa specific goals of the Strategy Group (Figure 2)



Material removed due to copyright compliance

Figure 5: Cultural Values Framework (Ngati Whakaue., 2015)

Local Authorities

The role of both the regional and district councils are to implement the strategy for the Rotorua lakes, provide administration for all issues concerning the Resource Management Act (1991), manage land uses within the catchments, monitor water quality and also fund the remaining 50% of the project.

5.3. The Waikato River

The Waikato River has a co-management framework established through the Treaty of Waitangi settlement, as specified in provisions of the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act (2010) as well as agreements with Ngāti Tūwharetoa, Raukawa and Te Arawa. This approach is significantly different to previous settlement outcomes and is an example of a new co-governance approach.

Iwi have made claims in relation to the Waikato River due to the Crown confiscation of land and the taking of land for public purposes since the 1840's. These confiscations excluded iwi from traditional water uses and management of the river and its resources.

A deed of settlement was signed in 2008 between the Crown and Waikato-Tainui resolving these claims of the Waikato River, and in 2009 aspects related to co-management in the deed were reviewed and changed, strengthening the deeds overall purpose (Muru-Lanning, 2012). Between 2008 and 2010, deeds were also signed with Ngāti Tūwharetoa, Raukawa, Te Arawa and Ngāti Maniapoto. These deeds formalised their involvement in the co-governance and co-management arrangements. The primary instruments for co-management were established under the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act (2010). This includes the establishment of the Waikato River Authority, a co-governance entity as well as individual co-management agreements (Joint Management Plans) between each river iwi and their local authority. The Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act (2010) also established the need for co-management agreement for river related lands and sites of significance.

“The purpose of the Waikato River Authority is to:

- a) Set the primary direction through the vision and strategy to achieve the restoration and protection of the health and wellbeing of the Waikato River for future generations:
- b) Promote an integrated, holistic, and coordinated approach to the implementation of the vision and strategy and the management of the Waikato River:
- c) Fund rehabilitation initiatives for the Waikato River in its role as trustee for the Waikato River Clean-up Trust.” (“Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act," 2010).

There are 10 members on the Waikato River Authority, five Crown-appointed members and five from each river iwi. One Crown-appointed member is nominated by Environment Waikato and a second by territorial authorities. There are two co-chairs; one appointed by the Minister for the Environment and the other is voted on and appointed by iwi.

The Waikato River Authority has a number of roles including maintaining a register of accredited resource management commissioners. Local authorities are required to notify the authority and relevant iwi when they receive resource consent applications concerned with the Waikato River. All hearing committees considering river-related resource consents must have 50% Waikato River Authority appointed commissioners. The Authority and Environment Waikato also jointly appoint an independent chair for resource consent hearings.

Another role of the Waikato River Authority is as the sole trustee of the Waikato River Clean-Up Trust. The trust was established by the Waikato River Settlement Act (2010), and is a fund for projects and initiatives contributing to the restoration and protection of the Waikato River.

There are also joint management agreements for the various iwi to exercise control and management of the Waikato River. This also includes co-management agreements for specific river related lands in accordance with the joint management agreement for the individual iwi.

6. Conceptual Framework

In order to be able to compare and contrast the three different co-management agreements a conceptual framework had to be established. This framework was developed from the range of literature on co-management as well as the issues identified in the various Treaty settlements identified in the case studies.

6.1. Representative (power sharing)

Typically in a power-sharing regime the less powerful partners are at a disadvantage (Berkes, 2009). As resource management in New Zealand is conducted through local government, it is usually the local government authorities that have the majority of the power. The government agencies are often reluctant to share their power, and thus becomes one of the inherent issues with co-management regime (Lu, Chueh, & Kao, 2012). Each party wants to pursue their own interests, and in doing so can end up compromising, contradicting or even defeating the purpose of the arrangements (Castro & Nielsen, 2001). In order for a co-management regime to be successful it must be focused on equality and collaboration, with no one party having a greater share of power than another (Nurse-Bray & Rist, 2009).

6.2. Adaptive

When a regime is adaptive it consciously incorporates flexibility and the ability to change over time as part of the management agreement (Nurse-Bray & Rist, 2009). When a regime is adaptive it allows for relationship changes between Indigenous people and local governments. One way of achieving adaptive management is through viewing co-management as a continuous process rather than a programme with specified outcomes

(Nursesey-Bray & Rist, 2009). As the relationship changes the goals can change and the co-management regime needs to be able to adapt to this. Monitoring is a critical aspect of any co-management regime, and the regime must be able to adapt to any changes that are identified post-implementation (Chen, Shivakoti, Zhu, & Maddox, 2012)

6.3. Exercising Rangatiratanga (cultural redress)

The main aims of settlement negotiations are to reach a settlement that: Is intended to remove the sense of grievance, is a fair, comprehensive, final and durable settlement of all the historical claims of the claimant group, and provides a foundation for a new and continuing relationship between the Crown and the claimant group (Office of Treaty Settlements., n.d). In order for a settlement to achieve these aims the Crown must recognise the wrongs done and provide an apology, provide financial and commercial redress and provide redress recognising the claimant group's spiritual, cultural, historical and/or traditional associations with the natural environment, sites and areas within the areas acknowledged (cultural redress). The apology and financial redress options are usually established through the settlement acts created after the deed of settlement is signed. However cultural redress is harder to meet through a settlement and often requires ongoing monitoring. Claimant groups often feel that they have a loss of ownership or guardianship, loss of access to resources as well as exclusion from decision-making on the environment or resources with cultural significance. The Treaty settlements establish the methods for cultural redress, but it is the ongoing co-management arrangements that monitor the effectiveness of the settlement and ensure that cultural redress is occurring as stated.

6.4. Inclusion of Indigenous Knowledge

If there is a distinct cultural difference between groups in the co-management arrangement then this forms a formidable obstacle to reaching consensus on management issues (Natcher et al., 2005). In order to effectively manage resources, knowledge of their systems in their full complexity is required (Berkes, 2009), including any Indigenous knowledge for the management of the resource. The complementarity of local knowledge and scientific knowledge is an increasingly important theme in resource management (Berkes, 2009). In order to have an effective co-management arrangement, all management systems and ideas must be acknowledged and represented.

7. Analysis

7.1. Representative (power sharing)

The co-management structure of Te Waihora is relatively different to Te Arawa Lakes and the Waikato River. Te Waihora has both statutory and non-statutory agreements operating allowing for an adequate mix of Indigenous and stakeholder input. The governance structure over the lake is very complicated due to the nature of the ownership structure and the various councils that have control over the management of the lake. The co-governance group (established under the co-governance agreement) is made up of seven commissioners specified by council, and eight members of the Te Waihora management board. The group meets on a monthly basis to ensure a strategic and integrated approach to management of issues within organisations that relate to Te Waihora and its catchment. The co-governance agreement also specifies the specific sharing of functions, duties and powers under the Resource Management Act (1991) and Local Government Act (2002). The agreement goes on to state that it will not derogate from the responsibility of Ngāi Tahu as kaitiaki of the lake.

The Te Arawa Lakes Settlement Act (2006) established the Te Arawa Lakes Strategy Group. The Strategy Group involves the Crown, Local Government and the Te Arawa Lakes Trust (local iwi). The Strategy Group as a whole develop the lakes restoration programme and is responsible for its implementation and monitoring. Māori represent one quarter of the Strategy Group, so have an influence over decisions. However the councils represent one half and therefore have a greater influence over the development of the programme.

The Waikato River Authority is made up of 50% Crown appointed members and 50% iwi appointed members. This in theory is very representative of Māori and provides iwi with a balanced mix of Indigenous and stakeholder representation. The Crown and specifically the Ministry for the Environment have the power make any decisions if the Authority cannot come to an agreement. The Settlement Act only specifies engagement with recognised river iwi, which could lead to a paradigm of exclusion for some river iwi, creating further grievances. The Waikato-Tainui iwi has the largest population and proportion of the river, yet has an equal role as other iwi. This under representation could lead to further grievances, with Waikato-Tainui not achieving the goals that they require to redress their concerns.

7.2. Adaptive

Te Waihora has multiple co-management arrangements that are non-statutory. As the Crown does not require them they are highly adaptable due to the fact that they have no statutory requirements. However most of these various arrangements have a requirement for monitoring. The monitoring requirement is to track progress and allows for changes to be made to the arrangements as they progress. The co-governance agreement specifically recognises that the relationship between the parties will evolve. This is essential as the parties recognise the need for adaptive co-management and the reality that as the arrangements grow and develop the relationships among them are going to change and the requirements of those relationships may end up vastly different to those established when the agreement was developed.

The Te Arawa Lakes Strategy Group specifies the roles of each partner organisation, with the council being responsible for the monitoring of the lakes. Ongoing monitoring

ensures that the Strategy Group can adjust their focus and create new goals for the Rotorua Lakes Restoration Programme. The group also publishes an annual report based on the monitoring findings and any innovative or developed incentives. While the Te Arawa Lakes Strategy Group was established through Treaty settlements is not subject to the same amount of prescribed processes. The Strategy Group meets five times a years and establishes incentives based on the monitoring. This makes the Rotorua Lakes Restoration Programme an ongoing process with the only static goal being the enhancement and protection of the quality of the lakes.

As the Waikato River Authority was established through Treaty settlements it is not as flexible as arrangements established through the iwi and local authorities directly. The Treaty settlements discuss the exact make up and duties of the Waikato River Authority, leaving little opportunity for movement with relationship changes. The Authority requires that the board co-chairs be changed every 5 years, with a different iwi being responsible each change. As the Authority is relatively recent it is hard to see how adaptive it can be, there are no previous examples of monitoring to review and identify opportunities for the authority and resulting outcomes to be adapted. The further arrangements required by the Treaty settlements may provide a greater opportunity to include adaptive co-management methods. This includes the various joint management plans required, as they have a requirement for continuous monitoring. The co-management agreement for river related lands is considered a living document, which can be updated and adapted to take in to account for future developments. While this is a step in the right direction more adaptive agreements are needed specifically relating to water in order to be more effective.

7.3. Exercising Rangatiratanga

The most important method in order for iwi to exercise rangatiratanga is through ownership of the beds of lakes and rivers. Every settlement addressed in these case studies had the beds of lakes and rivers returned to them as a form of cultural redress. This section addresses the ability that each has to exercise their rangatiratanga in their area.

The Ngāi Tahu Claims Settlement Act (1998) provides specific recognition of cultural values as well as the granting of specific planning and bylaw making powers in relation to the lake. Under the joint management programme Ngāi Tahu also has specific input in to statutory policy statements and plans relating to Te Waihora and its catchment and also in to the opening and closing of the lake, given its significance to Māori values in relation to the lake. Ngāi Tahu also has the right to make, alter and enforce decisions pertaining to how their resources and taonga are used and managed.

A role of the Te Arawa Lakes Trust is to ensure that the cultural identity of the Te Arawa people is invested in the Strategy to improve the lakes. Each lake in the Te Arawa area has an action plan developed for the restoration of the lake. The development of these action plans requires all stakeholders to evaluate options and provide actions that ensure rangatiratanga is being exercised. The Strategy Group recognises that Te Arawa has mana whenua as the owner of the lakebeds and provides cultural advice for all aspects relating to the lake.

In the Waikato Joint Management Plans are the main tool to give expression to iwi to exercise control and management of the river. The Waikato River Authority also has the

ability to appoint hearing commissioners for all river-related resource consent hearings. At these hearings there must be a minimum of 50% Waikato River Authority appointed commissioners. The Authority and Environment Waikato also jointly appoint an independent chair for these resource consent hearings. Customary activities are also provided for under statutory mechanisms that recognise and/or exempt customary activities from resource consent and navigation requirements.

7.4. Inclusion of Indigenous knowledge

The Joint Management Plan for Te Waihora specifies the development of an mātauranga Māori management system (Indigenous knowledge system) in conjunction with the Department of Conservation for the collection of mahinga kai and other natural resources. In addition the Joint Management Plan understands the holistic/systems approach that Māori have to resource management. The plan states that Ngāi Tahu should have more influence over the management of Te Waihora, with a result of their influence being an increase in the inclusion of Indigenous knowledge. The establishment of the Te Waihora Management Board has also increased the use of Indigenous knowledge, with the advisory board being consulted on a number of issues and having an influence over decisions made at a local government level.

The Te Arawa Lakes Strategy Group identifies and addresses issues of the whole group and was established in order to address issues arising from a lack of coordination between groups with an interest in the lakes. The idea that the group was developed to foster collaboration indicates that Indigenous knowledge would be well received and

utilised. Te Arawa as the owner of the lake bed has an obligation to provide cultural advice on all aspects pertaining to the lakes. There are also a number of technical advisory groups for the management of the lakes, which the Te Arawa Lakes Trust are a part of. However their role is unknown but their presence in the advisory group indicates the willingness to include Indigenous knowledge.

The Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act (2010) specifies that an integrated, holistic and co-ordinated approach to management of the physical, natural, cultural and historic resources of the Waikato River must be taken. While there is no direct discussion around the use of Indigenous knowledge in the Waikato River Authority it is assumed that methods would be incorporated at the discretion of the Authority, as 50% of the board are from recognised river iwi. The main objectives of the co-management agreement for Waikato River related lands (2012) are to be applied using both mātauranga Māori and the latest available scientific methods. This includes the restoration and protection of the health and wellbeing of the Waikato River. The inclusion of Indigenous knowledge in recent agreements indicates the importance for future co-management plans to include mātauranga Māori as well.

7.5 Summary of analysis (figure 6)

	Representative	Adaptive	Exercising Rangatiratanga	Inclusion of Indigenous knowledge
Te Waihora	<ul style="list-style-type: none"> -Adequate representation. - The co-governance group has a good mix of stakeholder and Indigenous input. -Specific agreements for Ngāi Tahu responsibility 	<ul style="list-style-type: none"> -Multiple non-statutory agreements, which are highly adaptive. -Requirements for monitoring. -Specific recognition that relationships will change 	<ul style="list-style-type: none"> - Ownership of bed of lake - Decision making rights - Planning and bylaw making power -Recognition of cultural values 	<ul style="list-style-type: none"> -Development of mātauranga Māori management system - Holistic approach - Influence increases use of Indigenous knowledge - Consultation
Te Arawa Lakes	<p>Strategy Group: Māori only represent ¼ of group, provides influence but not decision making power</p>	<ul style="list-style-type: none"> -Strategy Group requires continuous monitoring in order to set goals for the programme. -Ongoing process with goals established as needed 	<ul style="list-style-type: none"> - Ownership of bed of lakes -Recognition of mana whenua - Input in to action plan development 	<ul style="list-style-type: none"> -Strategy Group established to foster collaboration - Obligation to provide cultural advice - Involvement in technical advisory groups
The Waikato River	<ul style="list-style-type: none"> -Waikato River Authority: 50/50 mix of Māori and Crown members. -Māori members are not representative of river iwi 	<ul style="list-style-type: none"> -Treaty settlements leave little room for flexibility. -Requirement for monitoring. - Further co-management arrangements may provide more opportunity for adaptation. 	<ul style="list-style-type: none"> - Ownership of bed of River - Power in resource consent hearings - Customary activities provided for 	<ul style="list-style-type: none"> - Specifies an integrated, holistic, co-ordinated approach - Co-management agreement applied using mātauranga Māori

8. Discussion

The comparative analysis in the previous chapter combined with the theory from the conceptual framework provide valuable information in to understanding how local authorities are responding to and providing co-management avenues for Māori involvement in freshwater governance. As well as establishing how effective the various co-management regimes analysed are at incorporating Māori involvement. The analysis also provided a useful tool to compare and contrast the various co-management regimes in order to determine the strengths and weaknesses among them. This enables recommendations to be made to increase the effectiveness of Indigenous co-management in New Zealand.

8.1. Representative (power sharing)

Representation is important as it allows Indigenous peoples an equal share in power, which enables for more effective decision-making. All three case studies include representation of indigenous peoples, albeit to various extents. The combination of non-statutory and statutory agreements operating in Te Waihora provides numerous opportunities for indigenous representation. Ngāi Tahu has agreements with all stakeholders in the lake, and has negotiated their involvement and therefore representation in each agreement. This ensures that each stakeholder is actively engaged with Ngāi Tahu, understands their vision for the lake and provides Ngāi Tahu with decision-making powers with a number of stakeholders. This differs from the Te Arawa Lakes and the Waikato River which both have groups established through Treaty settlements. Both of these settlements specify the membership structure of the groups

and provide a statutory requirement for representation. This in theory provides greater representation, yet in reality both Te Arawa and the Waikato River iwi have a disproportionate amount of representation. The Strategy Group in Te Arawa includes only one quarter Māori, with the remaining three quarters coming from the Crown and local authorities. This provides the local iwi with an influence over decisions but not a decision making power. Whereas the Waikato River Authority is made up of 50% iwi appointed and 50% Crown appointed members. This is an effective power-sharing regime and provides excellent representation for iwi. However the effectiveness is diminished through the Crown having an overall decision-making ability in the case of a disagreement. The iwi representation is also disproportionate with the largest iwi having the same representation and therefore decision-making power as the smallest. As more non-statutory agreements are developed in accordance with the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act (2010), these problems may be mitigated. The use of Treaty settlements to ensure representation is effective in theory, however further measures need to be taken to ensure that this is true in practice. Having numerous agreements between stakeholders and iwi provides an opportunity for indigenous people to negotiate their own representation structure, and ensures that each stakeholder understands what the iwi vision and strategy is. As seen in Te Waihora, a combination of non-statutory and statutory agreements can be an excellent method to ensure there is adequate representation for iwi.

8.2. Adaptive

When a co-management regime is adaptive it incorporates flexibility and the ability to change over time. This includes relationship changes over time between the Indigenous

peoples and local authorities. It should also acknowledge and allow for changes within Indigenous societies. All three of the co-management agreements studied have a requirement for ongoing monitoring. This enables the various arrangements to have a sense of adaptability. As with representation, non-statutory agreements allow for more adaptable arrangements due to the fact that they have no formal requirements. One of the benefits of the co-management regime operating in Te Waihora is the recognition that the relationships will evolve and change as the regime develops. Adaptive co-management is further exemplified in the Te Arawa Lakes Strategy Group, with the restoration and the protection of the lakes being identified as an ongoing process, with goals being developed in line with results from the ongoing monitoring. This makes the Te Arawa Lakes arrangement highly adaptive. However there is no recognition for adaptivity or relationship changes in the Waikato River arrangements. This is due to the structured nature of the Treaty settlements, prescribed processes for the Waikato River Authority as well as the lack of non-statutory agreements. It is difficult to identify how adaptive the Waikato River co-management arrangements are given the recent establishment of the Authority. As the Waikato River Authority evolves, and more co-management agreements are developed the co-management regime may become more adaptive. Measures should however be undertaken in future co-management regimes to ensure that adaptive methods are incorporated. This will help preserve the longevity of the agreements already in place, while reinforcing that the nature of the relationships will evolve as it develops.

8.3. Exercising Rangatiratanga

The ability of the local iwi and hapū to exercise rangatiratanga is pivotal to the success of Indigenous co-management arrangements. Iwi must feel that they have ownership and decision making power over the water resource in order for to feel that their grievances have been addressed. The most important aspect of cultural redress is the returning of ownership of the beds of lakes and rivers to the iwi that traditionally managed and owned them. All three Treaty settlements returned the ownership of the beds of the relevant lakes and rivers to the traditional iwi. In addition to this the Indigenous peoples must feel that they can exercise rangatiratanga over the freshwater resource. Ngāi tahu has specific planning considerations and powers in relation to the lake as well as input in to statutory policy statements and plans. The biggest influence they have is their ability to make alter and enforce decisions pertaining to how their resources and taonga are used and managed. The Waikato River Authority have the ability to appoint hearing commissioners for all river-related resource consent hearings, with a minimum fifty percent being appointed by the Authority. The Waikato river iwis also have their customary activities provided for, which recognise and/or exempt customary activities from resource consents. This is significantly more than the ability Te Arawa has to exercise rangatiratanga. The Strategy Group only recognises that Te Arawa has mana whenua over the lake. Subsequently Te Arawa has an obligation to provide cultural advice and has some input in to the development of action plans. This lack of ability to exercise rangatiratanga can lead to Te Arawa feeling that they have inadequate influence over the lakes, with their grievances being unaddressed and problems arising in the co-management arrangements. In order to mitigate this measures should be implemented similar to those established for the Waikato River and Te Waihora.

8.4. Inclusion of Indigenous Knowledge

In order to have an effective co-management regime all management systems and ideas must be acknowledged and represented Both Te Waihora and the Waikato River provide direct recognition of a mātauranga Māori management system. This recognition indicates that both co-management regimes are willing to use indigenous knowledge and management methods for the management of their respective water bodies. Both of these co-management agreements also acknowledge that an integrated, holistic and co-ordinated approach to management must be taken. The Te Arawa Lakes co-management structure is different in that it does not directly acknowledge or refer to Indigenous knowledge. However the Strategy Group was established to foster collaboration, which indicates that Indigenous knowledge would be well accepted. However in order to ensure that Indigenous Knowledge is included in co-management arrangements it should be directly discussed and recognised. The inclusion of mātauranga Māori also helps iwi exercise ranagatiratanga, and ensures that the current management methods are complementary to the traditional management methods.

9. Conclusion

This study was set out to identify various ways that local authorities are responding to and providing co-management avenues for Māori involvement in freshwater governance, as well as analyse how effective the various co-management regimes studied are at incorporating Māori involvement, including the use of Indigenous knowledge. It was anticipated that the comparison of co-management agreements would establish the most effective approach to increase Māori participation thus providing local authorities with the tools and knowledge to adjust their approach accordingly.

The research indicated that in a number of areas Te Waihora, Te Arawa Lakes and the Waikato River display similar features; however, from this comparative case study it is evident that there is a range of differences. All three co-management regimes display the characteristics established in the conceptual framework; however the successfulness in which they are displayed varies greatly. The research indicates that not one of the co-management regimes analysed is remarkably more effective than the others. Each has an area of the conceptual framework in which it excels; with the other regimes needing improvement in that area. This finding has proved to be beneficial as it provides examples of improved systems, which can be implemented to improve the overall effectiveness of each individual arrangement. For example, while Te Waihora excels at representation, it falls short at being adaptive. The Te Arawa Strategy Group provides an effective method that can be implemented in to Te Waihora to rectify this shortcoming and increase the effectiveness of the arrangement.

This research has only just touched on the characteristics required by a co-management structure. There are many factors beyond those focused on within this research that will also have significant impacts in terms of the effectiveness of the co-management arrangements. It is therefore important to realise that this research does not provide a complete evaluation of the effectiveness of co-management arrangements in New Zealand.

Further research should be undertaken to include a number of different co-management regimes operating in New Zealand, as well as a larger conceptual framework to assess the effectiveness for all stakeholders, not just Māori. This research would be particularly relevant for identifying what factors contribute to the overall success of co-management arrangements and what factors may be hindering its success.

This research has provided a very good starting point for the increase in the effectiveness of co-management regimes in New Zealand. Co-management regimes have proven to be effective at incorporating and increasing Māori participation. This study provides local authorities with an analysis of various co-management regimes, which they can use to assess their own regime against. Subsequently local authorities can implement the methods and tools identified as beneficial in to their regimes in order to be more effective, and increase Māori participation in freshwater governance in New Zealand.

10. References

- Armitage, D., Berkes, F., & Doubleday, N. (2007). *Adaptive Co-Management : Collaboration, Learning, and Multi-Level Governance*. Vancouver, BC, CAN: UBC Press.
- Allen, W., Ataria, J. M., Apgar, J. M., Harmsworth, G., & Tremblay, L. A. (2009). Kia pono te mahi putaiao - doing science in the right spirit. *Journal of the Royal Society of New Zealand*, 39(4), 239-242.
- Bark, R. H., Garrick, D. E., Robinson, C. J., & Jackson, S. (2012). Adaptive basin governance and the prospects for meeting Indigenous water claims. *Environmental Science & Policy*, 19-20, 169-177.
- Baxter, P., & Jax, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13(4), 544 - 559.
- Berkes, F. (1999). *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. Philadelphia, PA: Taylor & Francis.
- Berkes, F. (2009). Evolution of co-management: Role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management*, 90, 1692-1702.
- Bown, N., Gray, T., & Stead, S. M. (2013). *Contested forms of Governance in Marine Protected Areas: A study of co-management and adaptive co-management*. Oxon: UK: Routledge.
- Buck, L. E., Geisler, C. C., Schelhas, J., & Wollenberg, E. (2001). *Biological Diversity: Balancing Interests through Adaptive Collaborative Management*. Florida, USA: CRC Press.
- Castro, A. P., & Nielsen, E. (2001). Indigenous people and co-management: Implications for conflict management. *Environmental Science & Policy*, 4(4-5), 229-239.
- Charters, C., & Stavenhagen, R. (Eds.). (2009). *Making the Declaration Work: The United Nations Declaration on the Rights of Indigenous Peoples*. Copenhagen: Denmark: IWGIA.
- Chen, H., Shivakoti, G., Zhu, T., & Maddox, D. (2012). Livelihood sustainability and community based co-management of forest resources in China: Changes and Improvement. *Environmental Management*, 49(1), 219-228.
- Coffin, A., & Allott, M. (2009). *Exploration of Māori Participation in Freshwater Management*. Tauranga: Boffa Miskell for Ministry for the Environment.
- Coombes, B. (2007). Postcolonial Conservation and Kiekie Harvests at Morere New Zealand - Abstracting Indigenous Knowledge from Indigenous Polities. *Geographical Research*, 42(2), 186-193.

- Department of Conservation. (n.d). *Lake Ellesmere/Te Waihora*. Retrieved from <http://www.doc.govt.nz/parks-and-recreation/places-to-visit/canterbury/christchurch-and-banks-peninsula/lake-ellesmere-te-waihora/>.
- Department of Conservation., & Te Rūnanga o Ngāi Tahu. (2005). *Te Waihora Joint Management Plan*. Christchurch.
- Dodson, G. (2014). Co-Governance and Local Empowerment? Conservation Partnership Frameworks and Marine Protection at Mimiwhangata, New Zealand. *Society & Natural Resources*, 27(5), 521-539.
- Dorough, D. S. (2009). The Significance of the Declaration on the Rights of Indigenous Peoples and its Future Implementation. In C. Charters & R. Stavenhagen (Eds.), *Making the Declaration Work: The United Nations Declaration on the Rights of Indigenous Peoples*. Copenhagen: Denmark: IWGIA.
- Feagin, J., Orum, A., & Sjoberg, G. (Eds.). (1991). *A Case for the Case Study*. Chapel Hill, NC: University of North Carolina Press.
- Harmsworth, G. R., & Awatere, S. (2013a). Indigenous Māori knowledge and perspectives of ecosystems In J. R. Dymond (Ed.), *Ecosystem services in New Zealand - conditions and trends*. Lincoln, New Zealand: Manaaki Whenua Press.
- Harmsworth, G. R., & Awatere, S. (2013b). Māori values for freshwater planning Symposium conducted at the meeting of the Freshwater Symposium: Tools for implementing the freshwater reforms, Wellington.
- Head, B. (2005). Participation or Co-Governance? Challenges for Regional Natural Resource Management. In R. M. Eversole, J (Ed.), *Participation and Governance in Regional Development: Global trends in an Australian context*. England: Ashgate Publishing Company.
- Hoverman, S., & Ayre, M. (2012). Methods and approaches to support Indigenous water planning: An example from the Tiwi Islands, Northern Territory, Australia. *Journal of Hydrology*, 474, 47-56.
- Hughey, K. F. D., Kerr, G. N., & Cullen, R. (2013). *Public Perceptions of New Zealand's Environment: 2013*. Christchurch: New Zealand: Lincoln University.
- Hughey, K. F. D., & Taylor, K. J. W. (Eds.). (2008). *Te Waihora/ Lake Ellesmere: State of the Lake and Future Management*. Christchurch, New Zealand: EOS Ecology.
- Jentoft, S., Minde, H., & Nilsen, R. (Eds.). (2003). *Indigenous Peoples: Resource Management and Global Righst*. The Netherlands: Eburon Academic Publishers.

- KCSM Consultancy Solutions. (2004). *Review of the Effectiveness of Iwi Management Plans: An Iwi Perspective*: KCSM Consultancy Solutions for The Ministry for the Environment.
- Land and Water Forum. (2010). *Report of the Land and Water Forum: A Fresh Start for Fresh Water*.
- Local Government Act, (2002).
- Local Government New Zealand. (2011). *Local Authorities and Māori: Case studies of local arrangements*.
- Lu, D., Chueh, H., & Kao, C. (2012). Why they cannot work together: A study of the co-management of natural resources with indigenos people in Taiwan. *Society & Natural Resources*, 25(1), 105.
- Marsden, M. (1988). *The natural world and natural resources: Māori value systems and perspectives*. Wellington: Ministry for the Environment.
- Matunga, H. (2000). Decolonising Planning: The Treaty of Waitangi, the environment and a dual planning tradition. In A. Memon & H. Perkins (Eds.), *Environmental Planning & Management in New Zealand*. Palmerston North: NZ: Dunmore Press Ltd.
- Meadowcroft, J. (1998). Co-operative management regimes: a way forward? In P. Glasbergen (Ed.), *Co-operative Environmental Governance: Public-Private Agreements as a Policy Strategy*. The Neatherlands: Kluwer Academic Publishers.
- Memon, A., & Kirk, N. (2011). *Breaking New Ground: Re-Inventing Māori Role in Te Waihora/Lake Ellesmere's Governance*. Department of Environmental Management, Lincoln University.
- Memon, A., & Perkins, H. (Eds.). (2000). *Environmental Planning & Management in New Zealand*. Palmerston North, New Zealand: Dunmore Press.
- Ministry for the Environment. (1997). *Environmental Performance Indicators: Proposals for Air, Freshwater and Land*. Wellington: Ministry for the Environment.
- Muru-Lanning, M. (2012). The Key Actors Of Waikato River Co-Governance. *AlterNative: An International Journal of Indigenous Peoples*, 8(2), 128-136.
- Natcher, D. C., Davis, S., & Hickey, C. G. (2005). Co-Management: Managing Relationships, Not Resources. *Human Organization*, 64(3), 240-250.
- National Policy Statement for Freshwater Management, 2014.
- New Zealand Business Council for Sustainable Development. (2008). *A Best Use Solution for New Zealand's Water Problems*.
- Ngāi Tahu Claims Settlement Act. (1998).
- Ngati Whakaue. (2015, 13 January 2015). *Te Arawa Cultural Values Framework hui*. Retrieved from <http://www.whakaue.org/2015/01/13/te-arawa-cultural-values-framework-hui/>.

- Nurse-Bray, M., & Rist, P. (2009). Co-management and protected area management: Achieving effective management of a contested site, lessons from the Great Barrier Reef World Heritage Area (GBRWHA). *Marine Policy*, 33(1), 118-127.
- Office of Treaty Settlements. (n.d). *Healing the past, building a future: A Guide to Treaty of Waitangi Claims and Negotiations with the Crown*. Wellington: Office of Treaty Settlements.
- Resource Management Act (1991).
- Ross, A., Pickering Sherman, K., Snodgrass, J. G., Delcore, H. D., & Sherman, R. (2011). *Indigenous Peoples and the Collaborative Stewardship of Nature: Knowledge binds and Institutional Conflicts*. CA; USA: Left Coast Press.
- Rotorua Lakes Council. (2015, 25 February 2015). *Rotorua Te Arawa Lakes Programme*. Retrieved <http://www.rdc.govt.nz/our-city/Lakes/RotoruaTeArawaLakes/Pages/default.aspx>
- Rotorua Lakes Protection and Restoration Action Programme. (2006). *Rotorua Lakes Recreation Strategy*. Rotorua.
- Ruru, J. (2009). *The Legal Voice of Māori in Freshwater Governance: A Literature Review*: Landcare Research.
- Ruru, J. (2010). Introducing why it matters: Indigenous peoples, the law and water. *Journal of Water Law*, 20(5/6), 221-223.
- Sax, J. L. (2009). Our precious water resources: Learning from the past, securing the future. *RM Theory & Practice*, 30.
- Smith, L. T. (1999). *Decolonizing Methodologies: Research and Indigenous Peoples*. Dunedin: University of Otago Press.
- Stephenson, J., & Moller, H. (2009). Cross-cultural environmental research and management: Challenges and progress. *Journal of the Royal Society of New Zealand*, 39(4), 139-149.
- Te Arawa Lakes Settlement Act, (2006).
- Te Wai Māori. (2008). *Discussion on Freshwater: A Wai Māori Perspective*.
- Te Waihora Management Board., Te Rūnanga o Ngāi Tahu., & Canterbury Regional Council. (2012). *Te Waihora Co-Governance Agreement*. Christchurch.
- Te Whiti Love, M. (2003). Resource Management, Local Government and the Treaty of Waitangi. In J. Hayward (Ed.), *Local Government and the Treaty of Waitangi*. Australia: Oxford.
- The Rotorua Lakes Strategy Co-Management Project Team. (2001). *Rotorua Lakes Strategy: Co-Management Options*.
- Tipa, G. (2002). *Indigenous Communities and the Co-management of Natural Resources: the Case of New Zealand Freshwater Management*. University of Otago, Dunedin, New Zealand.

- The Town and Country Planning Act, (1977).
- Treaty of Waitangi Act, (1975).
- Waihora Ellesmere Trust (2014). *WET Action Plan*. Christchurch: Waihora Ellesmere Trust
- Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act, (2010).
- Waikato River Authority. (2008). *Vision & Strategy for the Waikato River*. Hamilton: Waikato River Authority.
- Waitangi Tribunal. (2011). *Ko Aotearoa tenei: Tuatahi*. Wellington: Waitangi Tribunal.
- Watene-Rawiri, E. M., & Flavell, D. L. (2010). Significance to Waikato-Tainui. In K. J. Collier, D. P. Hamilton, W. N. Vant & C. Howard-Williams (Eds.), *Waters of the Waikato River*. Hamilton, New Zealand: Environment Waikato and the Centre for Biodiversity and Ecology Research.
- Watson, A. (2013). Misunderstanding the "Nature" of Co-Management: A Geography of Regulatory Science and Indigenous Knowledges (IK). *Environmental Management*, 52, 1085-1102.
- Williams, D. (1997). *Matauranga Māori and Taonga: The Nature and Extent of Treaty Rights Held by Iwi and Hapū in Indigenous Flora and Fauna, Cultural Heritage Objects and Valued Traditional Knowledge*.
- Yin, K. R. (2014). *Case Study Research: Design and Methods* (5 ed.). California, USA: SAGE Publications.
- Zurba, M., Ross, H., Izurieta, A., Rist, P., Bock, E., & Berkes, F. (2012). Building Co-Management as a Process: Problem Solving Through Partnerships in Aboriginal Country, Australia. *Environmental Management*, 49, 1130-1142.